T.R.I. ADVISORY CIRCULAR No.PM 5

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Sampling for Nematode Analysis

(This replaces the Advisory Circular PM 5, Serial No. 8/03, issued in July 2003)

1. Introduction

All species of pathogenic nematodes of tea inhabit roots and soil. However, their number and activity will depend on soil factors such as soil temperature, moisture, depth, use of agro-chemicals and organic matter etc. and plant factors such as age, cultivar and pruning cycle.

Tea fields or nurseries may show symptoms caused by nematodes such as slow decline in growth, yellowing of leaves, premature flowering and fruiting and stunted growth etc. due to other stress factors such as drought, water deficit, clayeyness, hard pan and water logging conditions, nutrient imbalances etc. Before taking samples for nematode estimation, such factors should be ruled out.

In order to assure a realistic nematode estimation, the sampling procedures adopted in nurseries, immature and mature tea fields are different to each other. Sampling should be done to represent different cultivars, ages, conditions and symptoms of nematodes and weaknesses in plants of nursery or field.

Nematode diagnosis is also proposed as an internal quarantine measure in assuring use of nematode free and healthy planting materials restricting dissemination of parasitic nematode species through planting materials in the tea growing areas.

2. Sampling for diagnostic purposes

Early detection helps to check on the spread of nematode infestation. It could also curtail the extent of damage by enabling the adoption of appropriate and timely corrective measures. Sampling should therefore, be done at critical points where nematode introduction, establishment and/ or development could possibly occur. Such vigilance is most essential amongst nursery, newly planted young tea fields and mature tea. Infestation can only be confirmed by microscopic examination of soil and root samples.

Soil and root sampling in the nursery/field should be assigned to a responsible person and be carried out under close supervision. An analytical report would only be as good as the sample submitted.

3. Sampling in the nursery

Sampling should commence about six months after the putting out of cuttings, or seed, in the nursery, when adequate roots have been developed. It is appropriate to sample the nursery prior to restacking plants. A minimum of 10 g of root material is needed per sample and the method adopted for sampling is as follows.

a. Take at least 5 plants at random from each bed of 1,000 plants
b. Pool the plants from 5 maximum of adjacent beds of the same cultivar and same age
c. Cut off the feeder roots, after removing the plants from the bags, and transfer the feeder roots to a clean polythene bag
d. Cover the root sample with some moist soil to avoid drying
e. Label each bag with Estate name, Division, Cultivar, Bed Number, Age, Date of sampling and time

In order to facilitate interpretation of the results of analysis and to give appropriate recommendations, it is necessary to send the duly filled Nursery History Fact Sheet issued by TRI.

4. Requisites of field sampling

Soil or root samples in the field should be drawn when the soil is adequately moist for at least 2 weeks. Soil and root sampling should be avoided after any soil disturbances such as fertilizer, soil agrochemical applications and / or organic matter additions. A minimum of one month period should be left before sampling.

It is also necessary to submit the duly perfected Crop and Field History Fact Sheet issued by TRI along with the samples to receive a proper diagnostic report.

4.1. Sampling in immature tea fields

Sampling of immature tea fields suspected as nematode infested is important for diagnostic purpose and necessary recommendations.

Additional samples may be taken separately from fields and/ or patches and weak areas showing possible nematode symptoms.

Only roots are required for detecting the presence of nematodes in new-clearings, the following method should be adopted to draw representative root samples.

a. Divide the field into blocks of 2 ha each, using natural boundaries such as footpaths *etc.* wherever possible as shown in the Figure below
b. Collect 25 - 30 samples at random points from each such 2 ha block
c. Collect about 5 g feeder roots from each sampling point. Pool all the samples and make about 50 g of feeder root composite sample and place in a clean polythene bag
d. Cover the root sample with a small quantity of moist soil to avoid drying
e. Label each bag with Estate name, Division, Field Number, Cultivar, Block Number, Age, Date of sampling and time

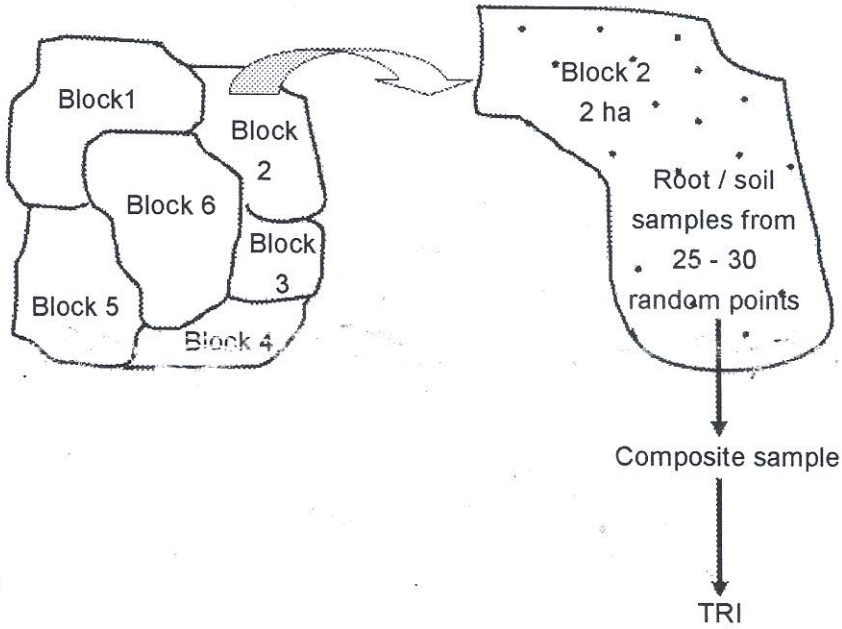

Figure 1. Method of collecting representative root and / or soil samples from young and mature tea fields for nematode estimation